FRBSF Weekly Letter

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Risk-Adjusted Deposit Insurance Premiums

The on-going deregulation of depository institutions has made reform of the deposit insurance system an idea whose time has come. In particular, the deregulation of deposit rates poses a substantial threat to the deposit insurance fund because it has given depository institutions the ability to expand their insured deposit base and stay in operation even after they have become insolvent on a market-value basis. As a result, undercapitalized institutions have been given expanded incentives to take risks.

A number of reforms to the present system have been proposed to enable the Federal Deposit Insurance Corporation (FDIC) to manage these increased risks. This *Letter* examines, first, the nature of the deposit insurance problem and why better control of risk-taking is necessary. Second, it evaluates the imposition of risk-adjusted premiums, which presumably would provide this control by charging each insured institution for the risks it imposes on the insurance fund. Such an approach has much theoretical appeal, but, as we shall see, it is not the panacea its proponents make it out to be.

The problem...

The problem with the present deposit insurance system is that it removes depositors' incentives to monitor the financial condition of the institutions where they place their funds. Deposit insurance thus gives insured institutions an incentive to take on more risk than they otherwise would. To prevent excessive risk-taking, the insuring agency must provide discipline by monitoring and closing insured institutions before their market net worth becomes negative. The failure to close insured institutions as they become insolvent creates a particularly large distortion in risk-taking. Shareholders of insolvent institutions are allowed, in effect, to continue gambling with someone else's (the FDIC's) money even after they have lost their stake in the game. Indeed, insured institutions need not actually be insolvent to have an incentive to undertake excessive risk. Just the observation that most insolvent institutions are not closed until after their net worth is substantially negative will induce solvent institutions to take on more risk.

In effect, the insurer is granting a greater than normal expected return on capital risk. To obtain this higher return, shareholders are willing to accept greater leverage and portfolio risk, even though, in a competitive banking system, the higher return will be shared by shareholders and purchasers of bank services (e.g., depositors and borrowers). Closing or reorganizing insured institutions before their market net worth becomes negative would eliminate this distortion. But market insolvency is hard to determine. Unless all of a bank's uninsured liabilities or all of its assets are publicly traded securities, the insurer must estimate market values where no objective prices exist.

In the absence of a timely insolvency proceeding by the insurer, one might expect a weak institution to be closed by a liquidity crisis. Yet this does not happen in many cases because virtually all deposits are *insured*, giving depositors little incentive to withdraw funds no matter how weak the institution appears to be. (Of course, as the Continental Illinois experience shows, if a signficant fraction of deposits is *uninsured* and the depositors involved are made to feel at risk, a bank can be subject to a run on the basis of a rumor, founded or unfounded.)

To make matters worse, the FDIC does not even have the legal authority to close a bank that, by its valuation, is insolvent. Instead, the bank's chartering authority (i.e., the Comptroller of the Currency for a national bank or the appropriate state banking agency for a state-chartered bank) must determine that a bank is insolvent before the FDIC can take action. This division of responsibility can create problems for the control of risk to the deposit insurance fund. Not having the insurance liability of the FDIC, the other regulators' concern for the perceived soundness of the banks they supervise may lead them to keep a bank open long after capital has been exhausted on a market-value basis.

Given available data, it is impossible to estimate accurately the amount of negative net worth (on a market value basis) that the FDIC is exposed to or has actually absorbed, let alone how much this has distorted banks' risk-taking decisions. How-

ever, based on the FDIC's recent losses, the amount of negative net worth and the resulting distortion is undoubtedly sizeable. Between 1980 and 1982, the FDIC's realized losses amounted to $2.2 billion—a lower-bound estimate of negative net worth.

The present system

Unless insured institutions are closed or reorganized before they become insolvent, some form of direct control of risk-taking is necessary. Short of reducing or eliminating insurance coverage, at least two approaches are possible: regulation of bank portfolios (including capital) and/or risk-adjusted pricing of deposit insurance. Under the present system, the FDIC must charge a uniform assessment rate regardless of the different risk postures of individual institutions. That annual assessment rate is set by law at one-twelfth of one percent per dollar of total deposits (or 8.3 basis points), but the actual rate paid typically is lower, depending on the FDIC's operating expenses and insurance losses. (The agency is required to rebate 60 percent of its net assessment income—total assessments less operating expenses and loss reserves—to the insured institutions.) Since this flat-rate premium does not reflect the risk of the individual bank, the task of controlling bank risk-taking falls to bank regulators and uninsured liability holders.

Critics of the present system argue that bank regulators have not maintained sufficiently stringent regulatory standards. Not only has the insurance fund incurred large losses over the past few years, but other indicators point to increased risk-taking as well. Capital ratios have declined over the last 20 or so years from 8.1 percent in 1960 to 5.8 percent of total assets in 1982. On a market-value basis, leverage is probably even higher due to large unrealized losses banks have incurred, particularly in their foreign and energy loan portfolios. The higher interest rate volatility of the past few years also has increased the riskiness of bank portfolios to some extent. And the recent deregulation of insured institutions' asset and product line constraints may have enhanced opportunities for risk-taking.

The solution?

Many have argued that risk-adjusted pricing of deposit insurance offers the solution to the problem of excessive risk-taking. Risk-related premiums are attractive from the viewpoint of economic efficiency because the decisions to undertake risk can be left with insured institutions while the insurer provides risk-taking discipline through the risk premium in the insurance assessment. Those institutions wishing to pursue a highly risky investment strategy would be free to do so, but would pay a higher premium than those that choose a more conservative strategy.

The FDIC has, in fact, proposed a modest step in the direction of risk-related pricing. The agency's recommendation is embodied in the proposed *Federal Deposit Insurance Improvements Act*, introduced in the Congress in May 1984. The FDIC is seeking the authority to retain part or all of the assessment rebate for any insured bank that represents a sizeable risk to the insurance fund. Since the rebate is 60 percent of the FDIC's net assessment income, the maximum size of the risk premium would be approximately four basis points. Thus, the range of the actual net insurance premium from low-risk to high-risk institutions would be 4.3 to 8.3 basis points per year.

Such a proposal is a modest one, even in the FDIC's view. Unfortunately, a risk premium as modest as four basis points is not likely to have much, if any, impact on the risk-taking proclivities of insured institutions. The economically efficient approach to risk-pricing requires that insured institutions be charged a premium equal to the present value of the insurer's potential loss weighted by the probability that the insured institution might fail prior to the insurer's next examination of that institution. Two studies that have estimated risk premiums for deposit insurance show that this economically efficient premium is well above the four basis points proposed by the FDIC.

A model of the cost of deposit insurance developed by Robert Merton suggests that the premium for a typical "high-risk" institution would be on the order of 100 basis points per dollar of deposits! (This assumes a capital ratio of 5 percent and a standard deviation of asset return 30 percent greater than the standard deviation of return on long-term Treasury bonds.) A less risky institution (capital ratio of 10 percent and the same level of asset risk) would be charged a 22 basis point premium according to Merton's model. An alternative model of deposit insurance developed by Pyle produced similar results: the hypothetical high-risk bank and lower risk bank in Merton's study should be charged 100 and 40 basis points, respectively. These premiums are roughly ten times those recommended by the FDIC.

It is interesting to note that in both studies, the premium goes up sharply even for seemingly modest increases in the riskiness of the institution. These results suggest that not only must the FDIC charge substantially higher premiums than those it has proposed, but it must also raise premiums almost exponentially as risk increases. Otherwise, there is little deterrent to increased risk-taking once an institution's condition begins to deteriorate.

Measurement problems

Even if the FDIC could surmount these obstacles, measurement problems associated with calculating the correct premium could make the risk-pricing approach ineffective as a means of controlling risk-taking. The concept of risk-pricing rests on the assumption that the insurer *can measure* the riskiness of insured institutions. This is no easy task. While research has greatly improved our ability to measure interest-rate risk, state-of-the-art techniques still are less than ideal. Credit (default) risk is even more difficult to assess. In defense of the concept of risk-pricing, one could argue, of course, that private debt markets are able to measure risk sufficiently well to set risk premiums on corporate debt instruments. However, regulators do not face the same "bottom-line" consequences as those who price private debt. Thus, it would be difficult for the FDIC to come up with the correct premium.

The problems associated with setting risk-related premiums go beyond the question of accurate risk measurement. Economically efficient pricing of deposit insurance also requires that an insured institution be closed promptly when, upon examination of its portfolio, the market value of its assets is found to be no greater than the insurer's liability. This means that the insurer (technically, chartering authority) must be able to appraise market value accurately, which, as mentioned earlier, is fraught with difficulty. It certainly cannot be done consistently when insolvency rules are based on the book value of assets. The failure to enforce a market value insolvency rule has a large impact on the value of the economically efficient insurance premium. Recent research (Pyle, 1983) suggests that errors in the measurement of an insured institution's market value will produce a bias in the insurance premium that is five or even ten times greater than that produced by mistakes of equal proportional size in the calculation of the riskiness of that institution.

In a sense, then, we have come full-circle. To price deposit insurance correctly, we need to measure market value accurately. But if we could measure market value accurately, we should be able to close insolvent institutions in time and generally avoid the problem of encouraging excessive risk-taking in the first place.

Another approach?

At first glance, risk-related pricing has a lot of appeal as a means of reducing insured institutions' incentives to undertake excessive risk. On closer examination, however, it has three major weaknesses. First, to be an effective deterrent to risk-taking for high risk institutions, the FDIC must demonstrate a willingness to raise premiums exponentially. Second, the limitations on our ability to measure asset risk make the calculation of the correct premium difficult at best. Finally, the problems associated with appraising the value of insured institutions introduce potentially large errors in the calculation of the insurance premium. Thus, unless we can find an effective way of closing or reorganizing institutions before they have negative net worth, we are still faced with the original problem of controlling risk-taking. The regulatory approach is considered in next week's *Letter*.

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BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT

(Dollar amounts in millions)

Selected Assets and Liabilities Large Commercial Banks	Amount Outstanding 7/25/84	Change from 7/18/84	Change from 12/28/83 Dollar	Change from 12/28/83 Percent Annualized
Loans, Leases and Investments[1] [2]	181,543	39	5,518	5.4
Loans and Leases[1] [6]	162,440	21	7,085	7.9
Commercial and Industrial	49,023	− 67	3,060	11.5
Real estate	60,492	27	1,593	4.6
Loans to Individuals	28,872	103	2,221	14.4
Leases	5,005	− 4	− 58	− 1.9
U.S. Treasury and Agency Securities[2]	11,944	− 6	− 563	− 7.8
Other Securities[2]	7,160	25	− 1,003	− 21.2
Total Deposits	186,153	−1,962	− 4,844	− 4.3
Demand Deposits	42,180	−2,024	− 7,057	− 24.8
Demand Deposits Adjusted[3]	28,627	− 444	− 2,704	− 14.9
Other Transaction Balances[4]	12,073	− 177	− 702	− 9.5
Total Non-Transaction Balances[6]	131,900	239	2,915	3.9
Money Market Deposit Accounts—Total	37,989	− 110	− 1,608	− 7.0
Time Deposits in Amounts of $100,000 or more	40,499	294	2,334	10.6
Other Liabilities for Borrowed Money[5]	19,514	−1,513	− 3,493	− 26.3

Weekly Averages of Daily Figures	Period ended 7/16/84	Period ended 7/02/84
Reserve Position, All Reporting Banks		
Excess Reserves (+)/Deficiency (−)	− 23	140
Borrowings	59	96
Net free reserves (+)/Net borrowed(−)	− 81	44

[1] Includes loss reserves, unearned income, excludes interbank loans
[2] Excludes trading account securities
[3] Excludes U.S. government and depository institution deposits and cash items
[4] ATS, NOW, Super NOW and savings accounts with telephone transfers
[5] Includes borrowing via FRB, TT&L notes, Fed Funds, RPs and other sources
[6] Includes items not shown separately